

CLAIMS

1 1. (Original) A communication system for communication using wireless signals including down-
2 link signals to and up-link signals from mobile stations, comprising,
3 a plurality of transceiver stations having broadcast channels and dedicated channels carried
4 by said wireless signals,
5 measurement means for forming measurements of said wireless signals,
6 zone manager means including,
7 processor means for processing said measurements forming processor information
8 to determine preferred ones of said transceiver stations for particular
9 dedicated channels for a particular mobile station,
10 control means for dynamically selecting said preferred ones of said transceiver
11 stations to provide said particular dedicated channels for said particular
12 mobile station separately from one of said transceiver stations providing
13 particular broadcast channels for said particular mobile station.

1 2. (Original) The communication system of Claim 1 wherein said measurement means measures
2 said up-link signals from said particular mobile station to form said measurements.

1 3. (Original) The communication system of Claim 2 wherein,
2 said control means is responsive to said processor information for changing said dedicated
3 channels as frequently as a signal change time determined by a frequency of said up-
4 link signals.

1 4. (Original) The communication system of Claim 3 wherein said change time is approximately
2 an up-link signal frame rate of said up-link signals.

1 5. (Original) The communication system of Claim 4 wherein said change time is a multiple of said
2 up-link signal frame rate.

1 6. (Original) The communication system of Claim 3 wherein said change time is less than 1
2 second.

1 7. (Original) The communication system of Claim 1 wherein said up-link signals from said
2 particular mobile station are measurement signals occurring at a measurement signal rate of $1/T$ and
3 wherein said processor operates,
4 to generate said measurements at a rate of $1/T$,
5 to integrate a plurality of said measurements over an integration length to form integrated
6 measurement reports,
7 to form said integrated measurement reports using said processor information.

1 8. (Original) The communication system of Claim 1 wherein said zone manager means is formed
2 of a plurality of zone managers, one for each of said transceiver stations.

1 9. (Original) The communication system of Claim 8 wherein said zone managers are co-located
2 with said transceiver stations at macrodiverse locations.

1 10. (Original) The communication system of Claim 9 wherein said zone managers are
2 interconnected with each other forming a network.

1 11. (Original) The communication system of Claim 8 wherein two or more of said zone managers
2 are co-located at a common location.

1 12. (Original) The communication system of Claim 11 wherein said common location is a base
2 station controller in a cellular system.

1 13. (Original) The communication system of Claim 8 wherein said plurality of zone managers
2 include a host zone manager and one or more assistant zone managers, said host zone manager
3 operative to communicate over said particular broadcast channels with said particular mobile station
4 while said particular dedicated channels for said particular mobile station are dynamically switched
5 among said one or more assistant zone managers and said host zone manager.

1 14. (Original) The communication system of Claim 13 wherein said measurement means includes
2 a plurality of measurement units, one for each of said zone managers, where each measurement unit
3 measures up-link traffic signals from said particular mobile station to form ones of said measure-
4 ments as unit measurements.

1 15. (Original) The communication system of Claim 13 wherein,
2 said transceiver stations include a plurality of macro-diverse broadcasters distributed at
3 macro-diverse broadcaster locations for broadcasting said down-link signals and
4 include a plurality of macro-diverse collector means distributed at macro-diverse
5 collector locations for receiving said up-link signals and providing received signals
6 for said particular mobile station,
7 said measurement means includes a plurality of measurement units, one for each of said zone
8 managers, where each measurement unit measures up-link signals from said
9 particular mobile station to form unit measurements representing the quality of said
10 received signals at one of said macrodiverse collector locations,
11 said processor means for a host zone manager receives a plurality of said unit measurements
12 and operates for processing said unit measurements to provide host processor
13 information for determining preferred ones of said broadcasters and preferred ones
14 of said collectors for said particular dedicated channels for said particular mobile
15 station,
16 said control means dynamically selects said particular dedicated channels for said particular
17 mobile station by selecting said preferred ones of said broadcasters to provide
18 particular down-link signals and dynamically selects said preferred ones of said
19 collectors to receive particular up-link signals for said particular mobile station.

1 16. (Original) The communication system of Claim 15 wherein,
2 said control means for said host zone manager is responsive to said host processor
3 information for changing said dedicated channels.

1 17. (Original) The communication system of Claim 15 wherein,
2 said control means for said host zone manager is responsive to said host processor
3 information for changing said dedicated channels as frequently as a signal change
4 time determined by a frequency of said up-link signals.

1 18. (Original) The communication system of Claim 17 wherein said change time is a multiple of
2 said up-link signal frame rate.

1 19. (Original) The communication system of Claim 15 wherein said up-link signals from said
2 particular mobile station are measurement signals occurring at a measurement signal rate of $1/T$,
3 wherein said measurement unit in each zone manager operates to generate said unit
4 measurements at a rate of $1/T$,
5 wherein said processor means in each zone manager operates, respectively, to generate
6 integrated unit measurement reports by integrating a plurality of said unit measure-
7 ments, respectively, over an integration length.

1 20. (Original) The communication system of Claim 19 wherein,
2 said processor means for said host zone manager receives and compares said zone integrated
3 unit measurement reports from a plurality of said zone managers to form host
4 processor information for said host zone manager.

1 21. (Original) The communication system of Claim 20 wherein,
2 said control means for said host zone manager is responsive to said host processor
3 information for changing said down-link signals to and said up-link signals from said
4 particular mobile station.

1 22. (Original) The communication system of Claim 20 wherein,
2 control means for said host zone manager has the capacity for making changes as frequently
3 as a signal change time determined by a frequency of said up-link signals.

1 23. (Original) The communication system of Claim 20 wherein said host processor information
2 is generated as function of comparison of k successive measurement reports.

1 24. (Original) The communication system of Claim 23 wherein $k=2$.

1 25. (Original) The communication system of Claim 1 wherein said manager means is formed of
2 a plurality of zone managers, one for each of said transceiver stations, each particular one of said
3 zone managers having,

4 control means including,

5 a resource manager for managing available resources in said communication system,

6 an airlink controller for controlling the radio channels in said communication system,

7 interface means for providing interfaces for said particular one of said zone managers.

1 26. (Original) The communication system of Claim 25 wherein said interface means includes a
2 zone_manager-to-zone_manager interface manager for controlling zone manager links among said
3 zone managers.

1 27. (Original) The communication system of Claim 25 wherein said interface means includes a
2 transceiver interface for controlling a transceiver link from said particular one of said zone managers
3 to a corresponding transceiver station.

1 28. (Original) The communication system of Claim 25 wherein said communication system
2 includes a controller link having an interface between a base station controller and one of said
3 transceiver stations and one of said zone managers, corresponding to said one of said transceiver
4 stations, is in said controller link.

1 29. (Original) The communication system of Claim 28 wherein said controller link is an Abis link.

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3 30. (Original) The communication system of Claim 25 wherein one or more of said zone managers
4 is integrated into one or more of said transceiver stations.

1 31. (Original) The communication system of Claim 1 wherein said control means includes
2 broadcaster commands for controlling the down-link signals to each of selected ones of said mobile
3 stations and collector commands for controlling the plurality of macro-diverse collectors for
4 changing the up-link signals for each of other selected ones of said mobile stations.

1 32. (Original) The communication system of Claim 1 wherein said wireless signals employ
2 multiple access protocols.

1 33. (Original) The communication system of Claim 32 wherein said wireless signals employ
2 TDMA protocols.

1 34. (Original) The communication system of Claim 32 wherein said wireless signals employ
2 CDMA protocols.

1 35. (Original) The communication system of Claim 32 wherein said wireless signals employ
2 SDMA protocols using smart antennas.

1 36. (Original) The communication system of Claim 32 wherein said wireless signals employ
2 FDMA protocols.

1 37. (Original) The communication system of Claim 1 wherein said transceiver stations
2 communicate over a region containing one or more zones and said measurement means includes
3 measurements from one or more collectors in said transceiver stations.

1 38. (Original) The communication system of Claim 37 wherein said measurements from one or
2 more collectors include radio link conditions between a mobile station and said one or more
3 collectors.

1 39. (Original) The communication system of Claim 38 wherein said radio link conditions include
2 path loss.

1 40. (Original) The communication system of Claim 38 wherein said radio link conditions include
2 forward error rates.

1 41. (Original) The communication system of Claim 38 wherein said radio link conditions include
2 carrier to interference ratio.

1 42. (Original) The communication system of Claim 37 wherein said measurements from one or
2 more collectors are processed in the zone manager means related to said one or more base transceiver
3 stations.

1 43. (Original) The communication system of Claim 1 wherein said zone manager means includes
2 a host zone manager and one or more assistant zone managers and said host zone manager processes
3 said measurements from the one or more assistant zone manager means to provide processed
4 measurements.

1 44. (Original) The communication system of Claim 43 wherein said host zone manager derives
2 processor information from said processed measurements.

1 45. (Original) The communication system of Claim 44 wherein said processor information includes
2 priority levels for the communication links with mobiles.

1 46. (Original) The communication system of Claim 44 wherein said processor information includes
2 timing and synchronization information.

1 47. (Original) The communication system of Claim 44 wherein said processor information includes
2 transmit power level.

1 48. (Original) The communication system of Claim 44 wherein said processor information includes
2 locations of mobile stations.

1 49. (Original) The communication system of Claim 1 wherein said transceiver stations include
2 broadcaster controllers for controlling broadcaster transmitters and said broadcaster controller selects
3 one or more broadcaster transmitters for forward communications with mobile stations based on said
4 processor information.

1 50. (Original) In a communication system for communication using wireless signals including
2 down-link signals to and up-link signals from mobile stations, the method comprising,
3 transmitting, from a plurality of transceiver stations, broadcast channels and dedicated
4 channels over said wireless signals,
5 forming measurements of said wireless signals with measurement means,
6 with zone manager means,
7 processing, with processor means, said measurements forming processor information
8 to determine preferred ones of said transceiver stations for particular
9 dedicated channels for a particular mobile station,
10 dynamically selecting, with control means, said preferred ones of said transceiver
11 stations to provide said particular dedicated channels for said particular
12 mobile station separately from one of said transceiver stations providing
13 particular broadcast channels for said particular mobile station.

1 51. (Original) In the communication system of Claim 50, measuring said up-link signals from said
2 particular mobile station to form said measurements.

1 52. (Original) In the communication system of Claim 50,
2 changing said dedicated channels as frequently as a signal change time determined by a
3 frequency of said up-link signals.

1 53. (Original) In the communication system of Claim 52 wherein said change time is approxi-
2 mately an up-link signal frame rate of said up-link signals.

1 54. (Original) In the communication system of Claim 53 wherein said change time is a multiple of
2 said up-link signal frame rate.

1 55. (Original) In the communication system of Claim 52 wherein said change time is less than 1
2 second.

1 56. (Original) The communication system of Claim 50 wherein said up-link signals from said
2 particular mobile station are measurement signals occurring at a measurement signal rate of $1/T$ and
3 wherein said processing operates,
4 to generate said measurements at a rate of $1/T$,
5 to integrating a plurality of said measurements over an integration length to form integrated
6 measurement reports,
7 to form said integrated measurement reports using said processor information.